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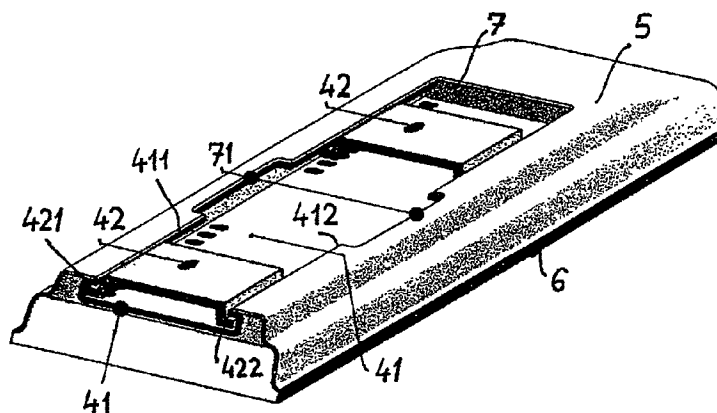
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(54) Title: SKI OR SIMILAR SKATING REQUISITE WITH INCORPORATED ASSEMBLY FOR ADJUSTABLE ATTACHING A SKI BINDING



(57) Abstract: The aim of the present invention is to improve a ski or similar skating requisite in such manner, that a ski binding being necessary for establishing appropriate connection between the said ski and a ski boot, could be attached to the said ski quickly, simply and firmly and also without any comprehensive steps, e.g. drilling bores or similar, and moreover, that quickly and simply and also regularly - with respect to physical and geometrical requirements - adjustment, displacement or even removing and subsequently mounting as well as replacement of the ski binding in situ would be possible, i.e. in the store, at home or even in the ski-field, but in each case without any need on assistance of professionals skilled in mounting ordinary ski bindings to the skis. Such ski or similar skating requisite comprises a sliding surface (6) faced towards the ground, and moreover several main areas, namely the forward area (1) with a bended tip (11), the rearward area (2) i.e. the tail, and the central area (3). According to the invention, an incorporated positioning-attachment assembly (4) of a binding, especially ski binding, in is foreseen its central area (3). The said assembly (4) comprises at least one guide (41, 41', 41''), which is placed within the ski, and moreover at least one slider (42, 42', 42'') which may be placed into the said guide(s) (41, 41', 41'') and moved thereafter in the longitudinal direction of the ski and also firmly arrested in each desired position.

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**Ski or similar skating requisite with incorporated assembly  
for adjustable attaching a ski binding**

The present invention relates to a ski or similar skating requisite with incorporated assembly for adjustable attaching a ski binding, namely such assembly, which is in common capable to serve as a positioning part and also as an attaching part of a ski binding or also e.g. of a snowboard binding, and which is incorporated into a ski or similar skating requisite already during the process of manufacturing thereof. That means that the said assembly for adjustable attaching a ski binding is built into the ski either during adhesion of constituent parts of the ski or also during finishing the ski after the said adhesion has been already performed. Integration the said assembly into the ski is commonly also possible in a combined manner, which means both, during the adhesion and during the said finishing after the said adhesion.

The invention especially relates to the so-called alpine ski, by which at least a part of the belonging ski binding as required for establishing appropriate connection between the said ski and the belonging ski boot, is incorporated inside the said ski during the manufacturing process thereof.

The aim of the present invention is to improve a ski or similar skating requisite in such manner, that a ski binding being necessary for establishing appropriate connection between the said ski and a ski boot, could be attached to the said ski quickly, simply and firmly and also without any comprehensive steps, e.g. drilling bores or similar, and moreover, that quickly and simply and regularly - with respect to physical and geometrical requirements - adjustment, displacement or even removing and subsequently mounting as well as replacement of the ski binding *in situ* would be possible i.e. in the store, at home or even in the ski-field, but in each case without any need on assistance of professionals like in case of mounting ordinary ski bindings.

As known to those skilled in the art, modern ski bindings generally consist of a forward part and a rearward part. Each of these parts may be mounted onto the top surface of a ski, and after that, both parts together enable attaching a ski shoe onto the ski. Attachment of these parts onto the ski may be realized by means of appropriate screws, which may be screwed into the ski upon drilling appropriate bores. During the skiing, the screws are exposed to essential tensioning, and may consequently often be at least partially loosen or even pulled out. After being pulled out, screwing the screw into the same bore is quite aimless, while drilling the additional bores located in adjacency results in certain change of position of the ski binding on the ski, which means a step away from the optimum physical and geometrical conditions, and consequently more difficult or irregular skiing.

In order to prevent the screws from being loosened, certain solutions are known in the prior art. One of them is published in the WO 91/12860. In accordance with this solution, a metal plate is mounted inside the ski during the process of manufacturing thereof, and appropriate bores are drilled into the said plate which have to be adapted for receiving appropriate screws. Incorporation of the said plate certainly has some influence with

respect to the weight of the ski, and moreover also with respect to statically and dynamically bending and other deformation characteristics of the ski.

In order to avoid these problems, certain number of inserts may be built into the ski during manufacturing thereof, which has been described in SI-9600234 or also in SI-9700220, so that by means of the said inserts appropriate threaded anchoring nests may be obtained which serve for receiving the screws intended for attachment a ski binding or a snowboard binding or any other binding of any similar skating requisite. Such anchoring nests are held within the core of the ski in a resilient manner, so that any pulling them out seems to be quite impossible. However, the problem still exists in that during the manufacturing the ski, the nests are filled by materials intended for making skis and covered by the so-called "skin", i.e. the top layer of the ski. Accordingly, the previously prepared and threaded bores have to be drilled again by means of a template which is connected to certain risk of damaging a thread or even jamming the borings within the thread which involves serious difficulties in removing them there-from. In each case, providing the said nests is a comprehensive step which may be performed by the manufacturer of the skis or also by any other professional skilled for mounting the ski bindings, but not also by an average user.

It is furthermore a fact that most of people uses skis for several ski-seasons and very often also for various purposes, as well as that people very often sell the skis or exchange them with anybody or resign them to anybody, so that the skis may commonly be assumed as a product-like e.g. a car, by which the owner may be changed. On the other hand, the users often decide to substitute the ski binding, either due to increasing his own weight and exceeding the allowed weight, or also due to choice a modern and more safety ski binding. In this case, the ski binding has to be removed and substituted, which is mostly connected with re-location of the screws, and by which on the desired locations the said nests are not

available. Again, assistance of a skilled professional is unavoidable, by which the bores are drilled in a conventional manner, and the screws are screwed thereto, which is then naturally connected with certain risk in course of pulling out the screws. Besides, previously used bores remain more or less visible on the top surface of the ski.

It often also happens, that users have to substitute their ski shoes. Especially by young skiers it may even happen before starting each ski-season. Although the ordinary ski binding are equipped by at least one attaching part (the forward one or the rearward one) which in parallel to attachment onto the ski also enables at least limited displacement along the top surface of the ski. However, due to displacing e.g. the heel part of the ski binding rearwards, the actual location of loading the ski result from the weight as well as of the activity of the skier is also displaced with respect to the center of gravity of the ski, which also means an essential step away from achieving optimum physical and geometrical conditions. It may also happen that the existing limited displacement is insufficient to enable attachment of the substituted ski shoe onto the ski. This also involves substitution or at least displacement of at least a part, i.e. either the forward one or the rearward one, of the ski binding.

In most cases, the person who just bought the ski or any similar skating requisite together with an appropriate binding, would commonly prefer avoiding any further problems related to mounting the bindings onto the ski or a similar skating requisite, especially when any further substitution, e.g. of a ski shoe, is planned in the future, or also, when such ski or skating requisite should be used also by any other person. It is therefore obvious, that mounting the ski binding without any drilling would be desired.

All the aforementioned deficiencies and inconveniences may be avoided in a surprisingly elegant manner thanks to a ski or similar skating requisite with incorporated assembly for

attachment a ski binding, where the said ski is commonly provided by a sliding surface faced towards the ground and by three main areas, namely the forward area with a bended tip, the rearward area i.e. the tail, and the central area. According to the invention, the ski is characterized by arranging an incorporated positioning-attachment assembly of a binding, especially ski binding, in its central area, by which the said assembly comprises at least one guide which is placed within the ski, and moreover at least one slider which may be placed into the said guide(s) and moved thereafter in the longitudinal direction of the ski and also firmly arrested in each desired position. At the one hand, the said positioning-attachment assembly is into the ski, and on the other hand it forms a part of a ski binding, i.e. a binding for attachment of corresponding footwear onto the ski or similar skating requisite. The positioning-attachment assembly belonging to the preferred embodiment consists of

- at least one guide which is built into the ski during the manufacturing thereof either during adhesion of the constituent parts of the ski or during finishing thereof or even in a combined manner during adhesion and during finishing by manufacturing the ski, and simultaneously of

- at least one slider which may be inserted into the said guide and moved after that in the longitudinal direction of the ski and also arrested in each desired position,

by which the said guide in its preferred embodiment is conceived as a C-profile, and consequently, the slider is conceived as a plate with bended or cracked peripheral longitudinal areas, so that the bended areas of the slider may be placed beneath the shanks of the said C-profile-shaped guide.

Furthermore, by one of several possible embodiments of a ski or similar skating requisite according to the invention, a guide is incorporated within the ski, in which two sliders are inserted and may be moved by means of the said guide along a cutout which is available

on the top surface in the central area of the ski. By this, the said cutout is equipped by at least one widened portion adapted for inserting the slider into the guide.

By the further one of possible embodiments, two guides are incorporated inside the ski, being arranged separately in certain distance each from another and simultaneously in aligned position each to other, and within each of them a single slider is inserted, which can be moved by means of the corresponding guide along the cutout which is available on the top surface in the central area of the ski. In this case, the said cutout is equipped by at least one widened portion adapted for inserting the slider into the guide.

By still another possible embodiment, a passage is arranged between at least two of the corresponding sliders which is foreseen for receiving a suitable means for enabling connection and correlation between the sliders and consequently between the forward part and the rearward part of the ski binding. The said passage may either be arranged under the surface of the ski, preferably as a hole or an opening extending in the longitudinal direction of the ski, or also on the surface of the ski, preferably as a groove or a channel extending in the longitudinal direction of the ski.

By still another embodiment there is a possibility that the central area of a ski or a similar skating requisite equipped by an elevated platform, is saddle-formed, so that between the elevated areas of the central area a lower intermediate area is available, by which within each of the both elevated areas of the central area of a ski equipped by appropriate elevated platform, a positioning-attachment assembly is arranged, which consists of at least one guide extending in the longitudinal direction of the ski, as well as of at least one slider placed within the said guide. By this, the said platform is preferably the so-called integrated platform, i.e. such one, which is integrated within the ski and is actually a part

of the ski. In common, platforms are also available which are mounted onto the ski subsequently after manufacturing the ski.

Now the invention will be described in more detail by means of embodiments which are illustrated in the attached drawings, where

Fig. 1 is a top view of the first embodiment of a ski according to the invention,

Fig. 2 is a partial side view of a ski according to Fig. 1,

Fig. 3 is a top view of the second embodiment of a ski according to the invention;

Fig. 4 is a partial side view of a ski according to Fig. 3,

Fig. 5 is a detailed presentation of the central area of the ski according to Fig. 1 and 2,

Fig. 6 is a detailed presentation of the central area of the ski according to Fig. 3 and 4,

Fig. 7 is a detailed presentation of an alternative embodiment of the central area of the ski according to Fig. 1 and 2.

Accordingly, the present invention relates to a ski or similar skating requisite, by which at least three typical areas may be defined, namely the forward area 1 with a curved tip 11, the rearward area 2 or the so-called tail 2, as well as the central area 3, in which by means of appropriate ski binding appropriate ski shoe, especially ski boot (not shown in the drawing) may be attached to the ski.

In order to simplify the description, the invention will be described exclusively on the basis of several embodiments which relate to skis, while some other possible requisites for enabling skiing or some other kind of sliding or skating on the snow, water or similar media, are not separately presented in graphical form. However, those skilled in the art should understand, that all of the described embodiments of the present embodiment might be simply and analogously applied also by any other requisite for locomotion by snow, water or similar media, i.e. by snowboards, water-skis, sliding requisites by artificial sliding surfaces or any other skating or sliding requisite being similar to ski.



As known to those skilled in the art, a ski is anticipated to be an elastic bending beam, by which the height or thickness the central area 3 thereof is greater as the height or thickness of its forward area 1 or rearward area 2. According to the present invention, at least one positioning-attachment assembly 4 of a ski binding is incorporated in the central area 3 of the ski, and arranged on the top surface of the ski, namely on the side which is faced away from the ground.

The said positioning-attachment assembly 4 is conceived in such manner that at the one hand, thanks to its parts which are incorporated into the ski, enables attaching both, the forward part and the rearward part i.e. the heel unit the ski binding onto the ski, and on the other hand thanks to its movable parts, it also enables moving of the parts of a ski binding in both directions, i.e. forwards and rearwards, by which a firmly fixation thereof in certain position is also foreseen.

Positioning-attachment assembly comprises at least one part, which is incorporated into the ski, i.e. of a guide 41, as well as at least one slider 42 which is placed within the said guide 41 and is movable in the longitudinal direction of the ski and can moreover be fixed in a desired position. Accordingly, each positioning-attachment assembly 4 is formed by means of a desired combination of the slider 42 and guide(s) 41, by which at the one hand the said assembly is no doubt a constituent part of a ski binding, but is also incorporated or integrated into the ski itself on the other hand.

The guide 41 of the assembly 4 may consist of metal or plastics and is commonly built into the ski already during manufacturing the ski, for example either during adhesion of constituent parts of the ski or also later-on, during finishing the ski, or also both, during adhesion and during finishing the ski. The guide 41 is preferably manufactured as a C-profile or similar profile. In common, each slider 42 may be inserted into each guide 41

after the guide has been built-in, and various manners of this insertion will be explained in more detail in the following description.

The illustrated embodiments concern to the skis, which are characterized by magnified height in the central area 3, the said height is some higher as it would be necessary in common. The skis are the so-called skis with integrated platform, by which certain benefits in course of ensuring appropriate forces or pressure onto ski edges may be achieved, while the required performances of the ski with respect to bending or elasticity may be maintained. Although such elevated embodiment of a ski is not unavoidable required in order to realize the invention, it might be quite comfortable in order to enable realization of various possible embodiments of the assembly 4.

By the first embodiment of a ski as shown in Fig. 1, the forward area 1 with a tip 11, the rearward area 2 i.e. a tail, and the central area 3 are visible, by which in the observed case the last one is upgraded by a so-called platform 5 (Fig. 2) which is an integrated platform i.e. built-into the ski already during manufacturing the ski and not attached thereon subsequently. The said central area 3 of the ski is illustrated in more detail in Fig. 5, where also configuration of the positioning-attachment assembly 4 as incorporated within the said ski, is illustrated in more detail. The guide 41, which is embedded as a C-profile in this given case, is built into the ski on the side faced away from the ground or the sliding surface 6. By this embodiment a single guide 41 is available, into which two sliders 42 are inserted being movable in the longitudinal direction of the ski (i.e. forwards, towards the tip 11, and also rearwards i.e. towards the rearward area 2 of the ski). By this, each slider 42 is made of a plate having bended or cracked longitudinal peripheral areas, so that the bended areas 421, 422 are placed under the shanks 411, 412 of the guide 41 formed as C-profile. Moreover, the positioning-attachment assembly 4 comprises at least one means for fixation or engagement the sliders 42 in each desired position, by which this means is just symbolically illustrated in Fig. 3 by a sequence of holes arranged to receive appropriate

arresting elements (not shown) which should be available on each slider 42 in order to be put into engagement with the said holes when desired. Furthermore, appropriate cutout 7 is foreseen in the top surface of the ski in the area of the said guide 41, along which the said slider 42 may be moved, and by the embodiment in accordance with Fig. 3, the said cutout 7 moreover comprises a widened portion 71, through which the said slider 42 may be inserted into the said cutout 7 and into the said guide 41, consequently.

Another embodiment of the ski is shown in Fig. 3 and 4, which is characterized by a saddle-shaped top surface of the central area 3 of the ski, which is faced away from the ground or the sliding surface 6 of the ski. This means that the elevated central area 3 of the ski, which is in this case again obtained by integration a platform 5, is interrupted and consists of two elevated areas as well as of an intermediate area 50, the height of which approximately corresponds to ordinary height of a non-elevated ski in its central area 3. By this embodiment, the positioning-attachment assembly 4 for ski binding can be realized in some different manner (Fig. 6), namely with two guides 41', 41" and two sliders 42', 42", by which a single slider 42', 42" is inserted within each belonging guide 41', 41". The concept of guides 42', 41" and sliders 42', 42" may essentially correspond to those as described before in connection with Fig. 1 - 3. Although in the discussed case the arresting means are not separately shown, it should be noted that also in this embodiment the sliders 42', 42" are inserted into the guides 41', 41" and may be moved in the longitudinal direction forwards and rearwards along the cutouts 7', 7", and moreover also that they can be firmly arrested in the desired position.

A further embodiment of the positioning-attachment assembly 4 is shown in Fig. 7, which might belong e.g. to the ski according to Fig. 1 and 2, and which comprises two guides 41', 41" being arranged separately on certain distance each from another but at the same time in aligned position with respect to each other in the longitudinal direction of the ski, by which a single slider 42', 42" is inserted into the corresponding guide 41', 41". The

concept of embodiment of the said guides 41', 41" and sliders 42', 42" may also in this case correspond to those which have been described in connection with the previous embodiments. Although also in this case the arresting means are not separately shown it should be noted that also in this embodiment the sliders 42', 42" are inserted into the guides 41', 41" and may be moved in the longitudinal direction forwards and rearwards along the cutouts 7', 7", and moreover also that they can be firmly arrested in the desired position, by which each cutout 7', 7" is equipped by a widened area 71, 71" through which the corresponding slider 42', 42" can be inserted into the corresponding guide 41', 41". This embodiment is furthermore characterized by a passage 8 which is arranged in the longitudinal direction of the ski in the central area 3 between the said cutouts 7', 7" in order to receive a not-shown connecting means in order to ensure connection between both sliders 42', 42" as required for establishing appropriate correlation and connection between the forward part and rearward part of the ski binding. In this case, the said passage 8 is available in form of a tunnel or a longitudinal opening available within the ski, but in common it might also be realized e.g. as a groove or a channel arranged on the top surface of the ski.

It should be furthermore noted that by all described embodiments, each slider 42, 42', 42" as inserted in each belonging guide 41, 41', 41" in fact forms a part of a ski binding which is connected to the belonging forward part or rearward part of a ski binding. To this aim, whenever desired, each slider 42, 42', 42" may be equipped by certain number of pre-formed threaded bores (not shown in the drawings), to which corresponding screws (also not shown in the drawing) may be screwed after inserting the slider(s) 42, 42', 42" into belonging guide(s) 41, 41', 41", in order to attach the ski binding onto the ski. After adjusting the desired position of the forward part and the rearward part of the ski binding by means of moving the corresponding slider(s) 42, 42', 42" along to the corresponding guide(s) 41, 41', 41" either forwards or rearwards in the longitudinal direction of the ski, the complete ski binding can be firmly fixed in the desired position by simply fixation of

the sliders 42, 42', 42". By this, there is no need e.g. on drilling any bores into the ski or performing any other measures beyond the resources available to an average user or his common knowledge. If desired, the ski binding which has already been adjusted into appropriate position, may also be displaced to any other position, which can be achieved by simply releasing the sliders 42, 42', 42" and displacing thereof in the longitudinal direction of the ski, and then arresting them in any other desired position.

## PATENT CLAIMS

1. Ski with incorporated assembly for adjustable attachment s ski binding, having a sliding surface (6) faced towards the ground and moreover three main areas, namely the forward area (1) with a bended tip (11), the rearward area (2) i.e. the tail, and the central area (3), characterized by arranging an incorporated positioning-attachment assembly (4) of a binding, especially ski binding, in its central area (3), by which the said assembly (4) comprises at least one guide (41, 41', 41'') which is placed within the ski, and moreover at least one slider (42, 42', 42'') which may be placed into the said guide(s) (41, 41', 41'') and moved thereafter in the longitudinal direction of the ski and also firmly arrested in each desired position.

2. Ski or similar skating requisite according to claim 1, characterized in that, the positioning-attachment assembly (4) is at the one hand built into the ski, and on the other hand it forms a part of a ski binding, i.e. a binding for attaching a corresponding footwear onto the ski or similar skating requisite.

3. Ski or similar skating requisite according to claim 1, characterized in that, the said positioning-attachment assembly consists of

- at least one guide (41, 41', 41'') which is built into the ski during the manufacturing thereof either during adhesion of the constituent parts of the ski or during finishing thereof or even in a combined manner during adhesion and during finishing by manufacturing the ski,

and simultaneously of

- at least one slider (42, 42', 42'') which may be inserted into the said guide (41, 41', 41'') and moved after that in the longitudinal direction of the ski and also arrested in each desired position,

whereby the said guide (41, 41', 41'') in its preferred embodiment is conceived as a C-profile, and consequently, the slider (42, 42', 42'') is conceived as a plate with bended or cracked peripheral longitudinal areas, so that the bended areas (421, 422) of the slider (42, 42', 42'') may be placed beneath the shanks (411, 412) of the said C-profile-shaped guide (41, 41', 41'').

4. Ski or similar skating requisite according to claim 1, characterized in that, a guide (41) is incorporated within the ski, in which two sliders (42', 42'') are inserted and may be moved by means of the said guide (41) along a cutout (7) which is available on the top surface in the central area (3) of the ski.

5. Ski or similar skating requisite according to claim 4, characterized in that the cutout (7) is equipped by at least one widened portion (71) adapted for inserting the slider (42) into the guide (41).

6. Ski or similar skating requisite according to claim 1, characterized in that, two guides (41) are incorporated inside the ski, being arranged separately in certain distance each from another and simultaneously in aligned position each to other, and within each of them a single slider (42', 42'') is inserted, which can be moved by means of the corresponding guide (41) along the cutout (7) which is available on the top surface in the central area (3) of the ski.

7. Ski or similar skating requisite according to claim 6, characterized in that the cutout (7) is equipped by at least one widened portion (71) adapted for inserting the slider (42) into the guide (41).

8. Ski or similar skating requisite according to claim 1, characterized in that, a passage (8) is arranged between at least two of the corresponding sliders (42', 42'') which is foreseen for receiving a suitable means for enabling connection and correlation between the sliders (42', 42'') and consequently between the forward part and the rearward part of the ski binding.

9. Ski or similar skating requisite according to claim 6, characterized in that the said passage is arranged under the surface of the ski, preferably as a hole or an opening extending in the longitudinal direction of the ski.

10. Ski or similar skating requisite according to claim 8, characterized in that the said passage is arranged on the surface of the ski, preferably as a groove or a channel extending in the longitudinal direction of the ski.

11. Ski or similar skating requisite according to claim 1, characterized by that its central area (3), which is equipped by an elevated platform (5), is moreover saddle-formed, so that between the elevated areas (5', 5'') of the central area (3) a lower intermediate area (50) is available.

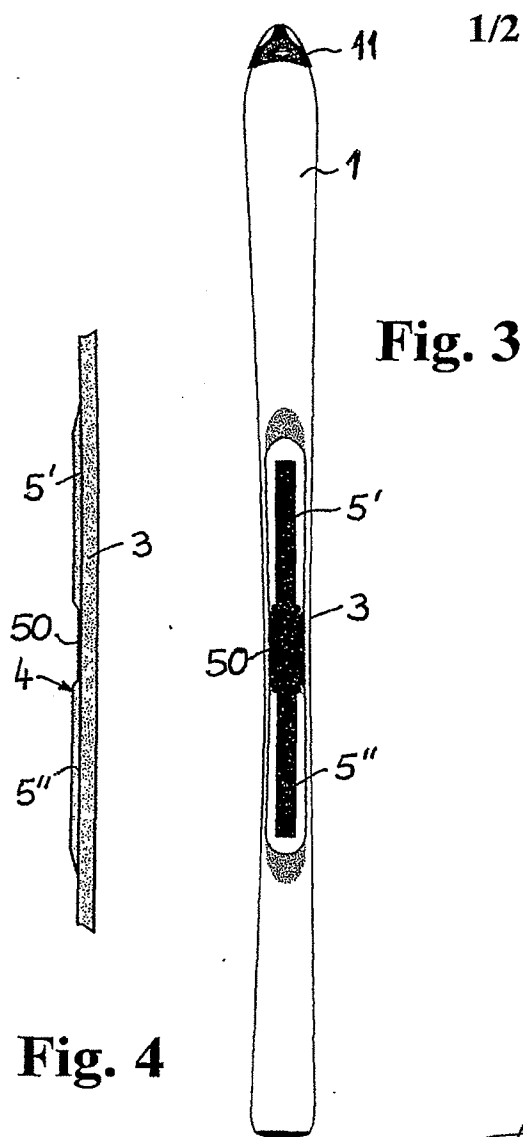
12. Ski or similar skating requisite according to claim 11, characterized by that within each of both elevated areas (5', 5'') of the central area (3) of a ski equipped by appropriate elevated platform (5), a positioning-attachment assembly is arranged, which consists of at least one guide (41) extending in the longitudinal direction of the ski, as well as of at least one slider (42) placed within the said guide (41).

13. Ski or similar skating requisite according to claim 11, characterized by that its central area (3) being equipped by an elevated and integrated platform (5), is saddle-

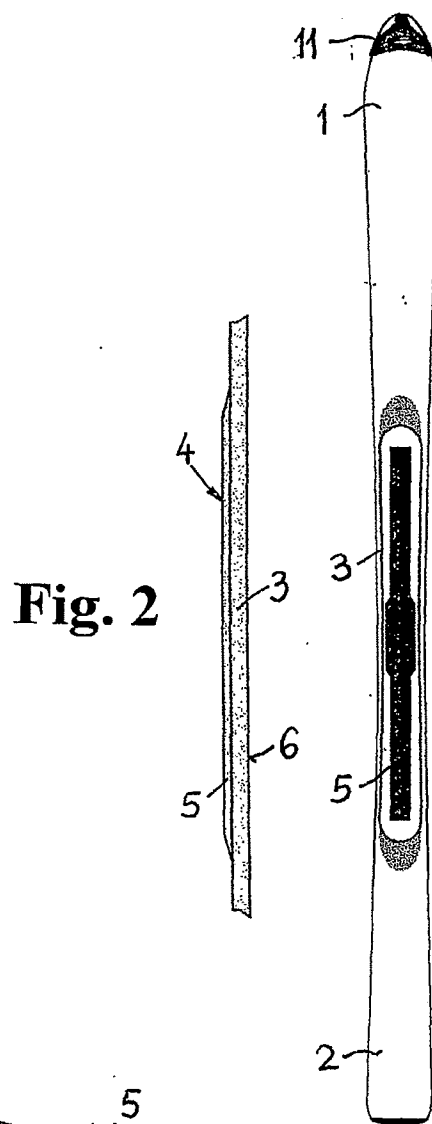


formed, so that between the elevated areas (5', 5'') of the central area (3) a lower intermediate area (50) is available.

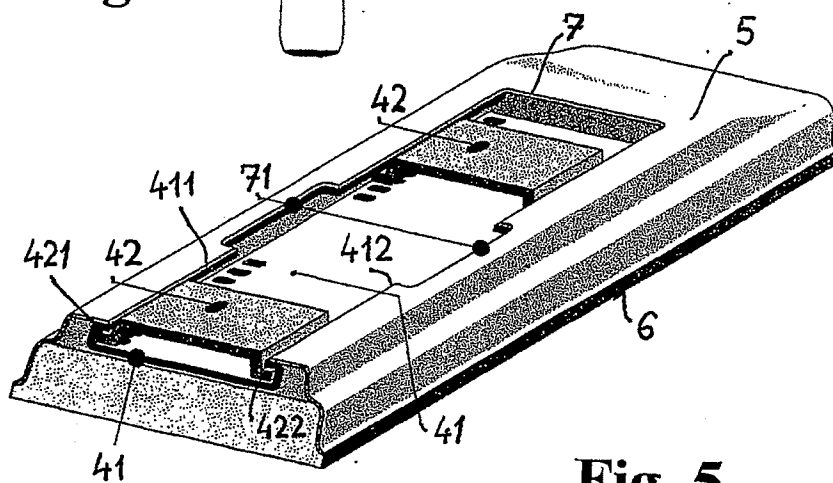
14. Ski or similar skating requisite according to claim 12, characterized by that within each of both elevated areas (5', 5'') of the central area (3) of a ski equipped by appropriate elevated and integrated platform (5), a positioning-attachment assembly is arranged, which consists of at least one guide (41) extending in the longitudinal direction of the ski, as well as of at least one slider (42) placed within the said guide (41).



**Fig. 3**



**Fig. 2**

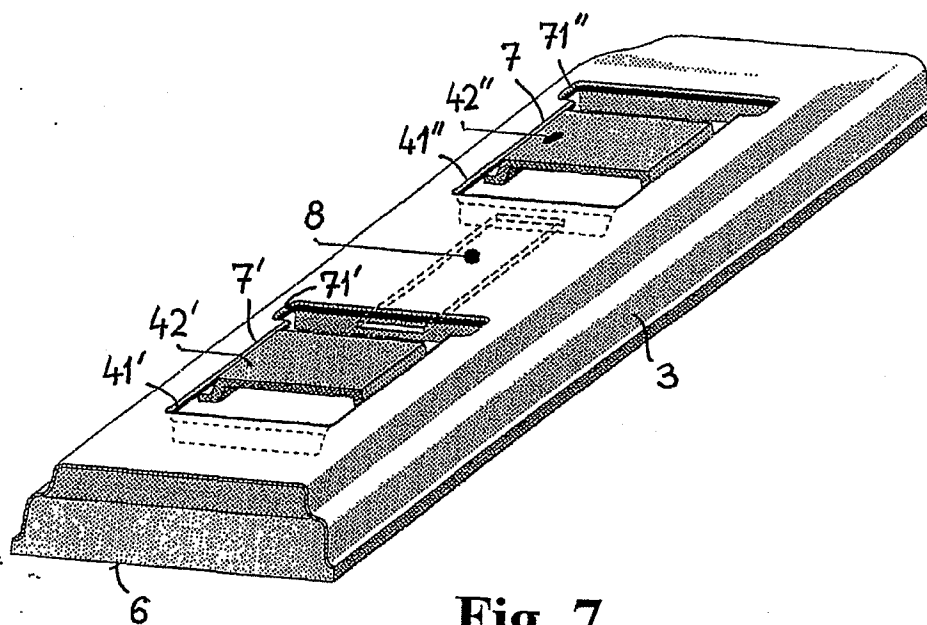
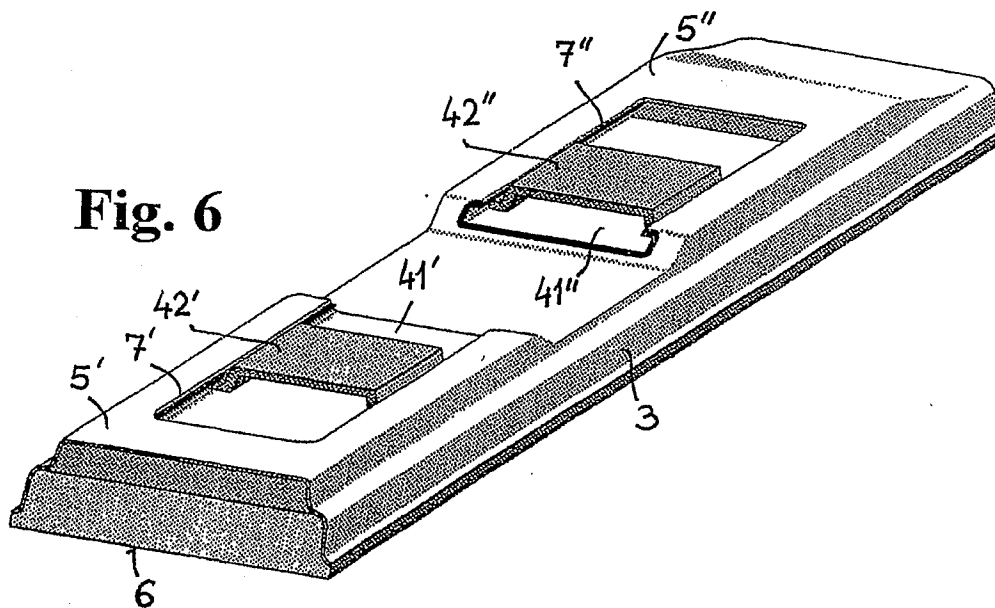


**Fig. 5**

**Fig. 1**

2/2

**Fig. 6**



**Fig. 7**

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/SI 01/00025

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A63C9/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A63C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 722 108 A (TYROLIA FREIZEITGERAETE) 12 January 1996 (1996-01-12) figure 4	1
A	US 3 785 666 A (PIERRE ET AL.) 15 January 1974 (1974-01-15) figures	1
A	FR 2 772 286 A (SKIS DYNASTAR) 18 June 1999 (1999-06-18) the whole document	1
A	US 4 955 633 A (STRITZL) 11 September 1990 (1990-09-11) figures	1
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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## INTERNATIONAL SEARCH REPORT

International Application No

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